



TITLE:

How is the IUGONET project using TDAS?

AUTHOR(S):

HAYASHI, Hiroo; TANAKA, Yoshimasa; SHINBORI, Atsuki; HORI, Tomoaki; KOYAMA, Yukinobu; KAGITANI, Masato; ABE, Shuji; ... TADOKORO, Hiroyasu; MOTOKA, Tetsuo; IUGONET project team

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IUGONET

Metadata DB for Upper Atmosphere

超高層大気長期変動の全球地上ネットワーク観測・研究
Inter-university Upper atmosphere Global Observation NETwork

*GEM Mini-Workshop, San Francisco, 4 Dec. 2011
- Themis Data Analysis Software tutorial -*

How is the IUGONET project using TDAS?

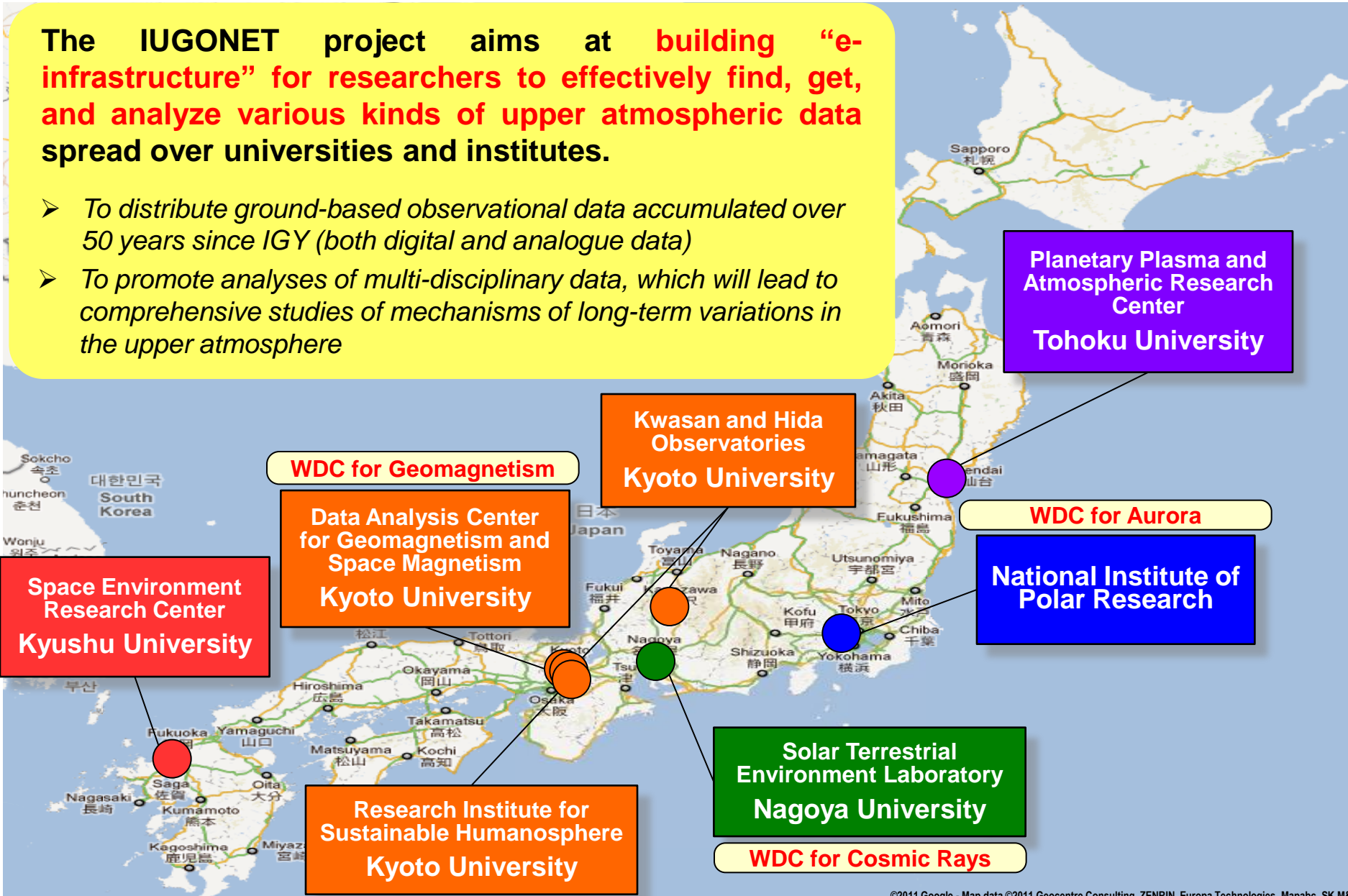
**(IUGONET : Inter-university Upper atmosphere
Global Observation NETwork)**

**H. Hayashi, Y. Tanaka, A. Shinbori, T. Hori, Y. Koyama,
M. Kagitani, S. Abe, T. Kouno, D. Yoshida, S. UeNo,
N. Kaneda, M. Yoneda, H. Tadokoro, T. Motoba,
and IUGONET project team**

The IUGONET project - Objectives

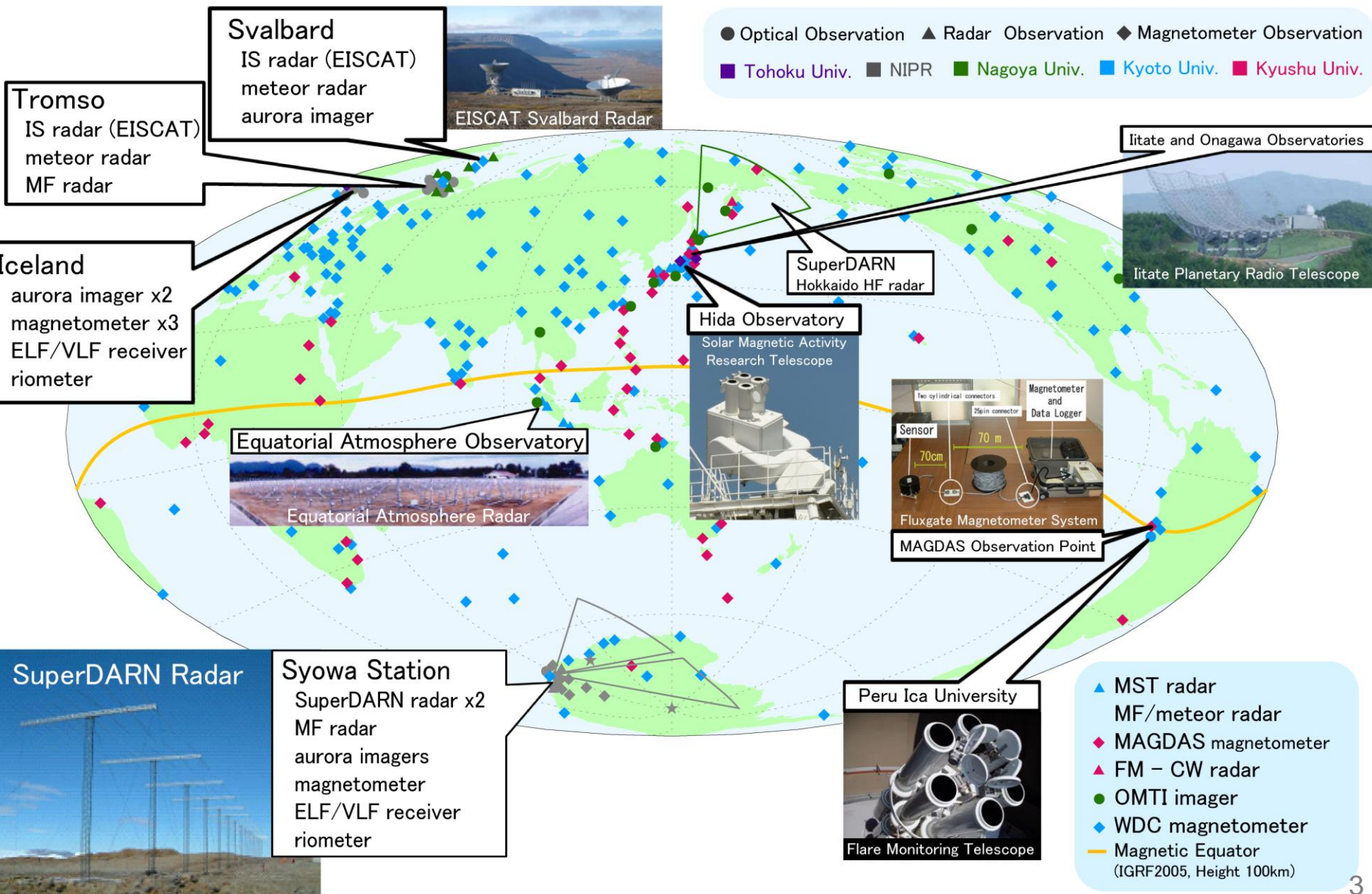
The IUGONET project aims at building “e-infrastructure” for researchers to effectively find, get, and analyze various kinds of upper atmospheric data spread over universities and institutes.

- To distribute ground-based observational data accumulated over 50 years since IGY (both digital and analogue data)
- To promote analyses of multi-disciplinary data, which will lead to comprehensive studies of mechanisms of long-term variations in the upper atmosphere



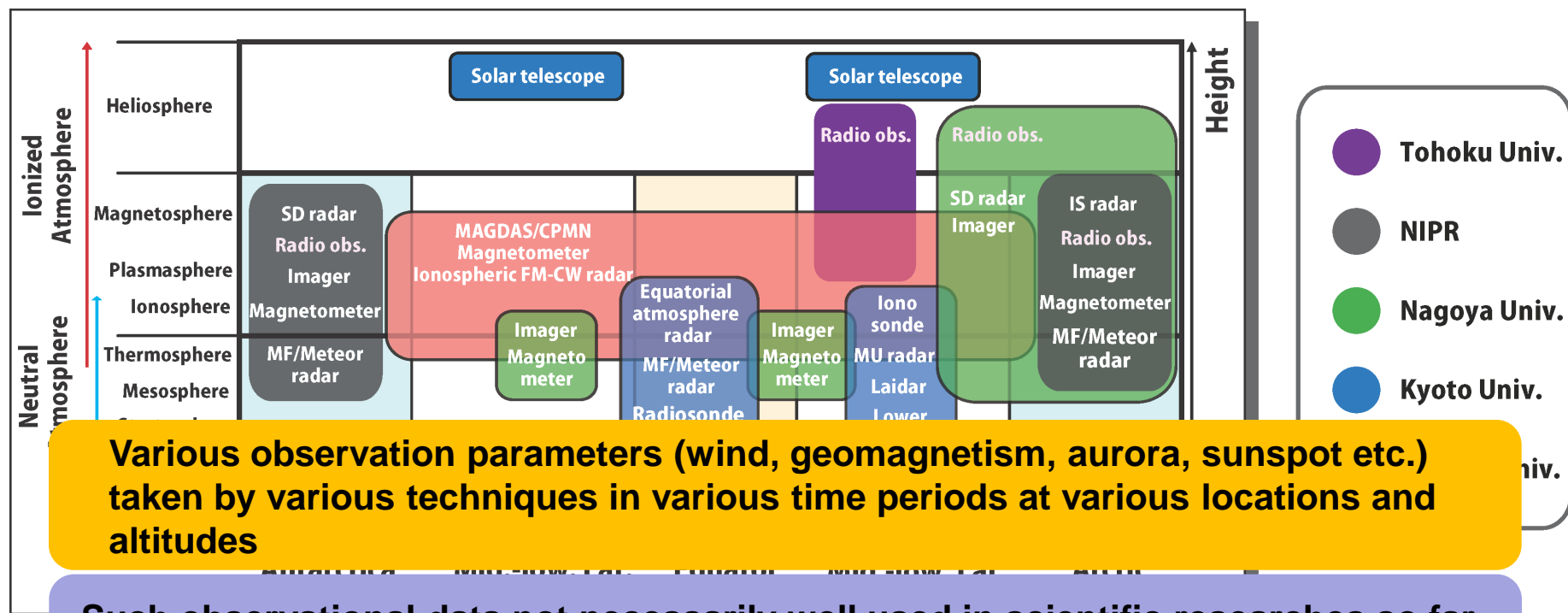
IUGONET

Ground-based observations





Problems with data use



Various observation parameters (wind, geomagnetism, aurora, sunspot etc.) taken by various techniques in various time periods at various locations and altitudes

Such observational data not necessarily well used in scientific researches so far

→ **PROBLEMS:** databases dispersed, too little info, various data format, etc.

SOLUTIONS

1. Metadata database : to share info of data online and realize cross-search
2. Data analysis software : to help users quickly visualize and analyze data



Main products by the IUGONET project

1. Metadata database

<http://search.iugonet.org/iugonet>

Relative Stop Date: 14 days ago (-P14D)
<http://gemsissc.stelab.nagoya-u.ac.jp/erg/>

Repository: <spase://IUGONET/Repository/STEL/ERG-SC>
Instrument: <spase://IUGONET/Instrument/STEL/SuperDARN/HOK/HFradar>

Result of Search

[The common time fitacf CDF data of SuperDARN King Salmon HF radar distributed by ERG-SC](#)

NumericalData

Common mode data obtained by SuperDARN King Salmon HF radar. Data files are distributed in the CDF format through the ERG-SC repository
Start Date: 2006-12-02T00:00:00
Relative Stop Date: 180 days ago (-P180D)
<http://gemsissc.stelab.nagoya-u.ac.jp/erg/>

Repository: <spase://IUGONET/Repository/STEL/ERG-SC>
Instrument: <spase://IUGONET/Instrument/STEL/SuperDARN/KSR/HFradar>

Standard observation data of the troposphere and lower stratosphere taken by the MU radar (NetCDF format)

NumericalData

The 10-minute average (NetCDF format) data taken by the MU radar at Shigaraki in the Shiga prefecture, Japan (34.85N, 136.10E, 385m MSL), which has been operated in the standard observation mode of the troposphere and stratosphere. The observation data are stored in the NetCDF files of each day. The file name is (year)(month)(day).nc. The NetCDF data include range, height, time, three components of wind velocity, radial Doppler velocity, echo power, spectral width and noise level for each beam number and so on. The azimuth and zenith angles of beam 1, 2, 3, 4 and 5 are (0, 0), (0, 10), (90, 10), (180, 10) and (270, 10), respectively, in unit of degree. The value of 1.0e+10 means missing data.
Start Date: 1986-03-16T15:05:00
Relative Stop Date: 14 days ago (-P14D)
<http://www.rish.kyoto-u.ac.jp/radar-group/mu/data/>

Repository: <spase://IUGONET/Repository/STEL/ERG-SC>
Instrument: <spase://IUGONET/Instrument/STEL/SuperDARN/HOK/HFradar>

Field-aligned irregularity (FAI) observation data of the ionosphere taken by the EAR (NetCDF format)

NumericalData

The field-aligned irregularity (FAI) observation data in the NetCDF (Network Common Data Form) format taken by the equatorial atmosphere radar (EAR) at Kototabang, Indonesia (0.20S, 100.32E, 865m MSL). This FAI observation mode covers a wide altitude range from 80 to 600 km in the ionosphere (D-region (below 90 km), E-region (90-150 km), and F-region (above 150 km)). The observation data are stored in the NetCDF files of each day and observation parameter. The file name is (year)(month)(day).(observation parameter).nc. The NetCDF data include range, height, time, radial Doppler velocity, echo power, spectral width and noise level for each beam number and so on. Details of the observation parameter are described in the EAR-FAI homepage (<http://www.rish.kyoto-u.ac.jp/ear/data-fai/index.html>). The value of 1.0e+10 means missing data.

Go to metadata details

Jump to database web

2. Data analysis software

<http://www.iugonet.org/en/software.html>

UDAS (IUGONET Data Analysis Software)

Topics

- UDAS v1.00.b1 was released on May 13, 2011. — [Download UDAS](#)

What is UDAS?

We provide users with IUGONET Data Analysis Software (UDAS) to read and analyze ground-based observational data opened individually by [each institution in the IUGONET project](#).

- UDAS is a plug-in software of [THEMIS Data Analysis Software suite \(TDAS\)](#), which has many useful routines to visualize and analyze time series data.
- It accesses the IUGONET data through the internet, and then the data are automatically downloaded onto the user's computer. Users can get and analyze the data without any concerns about data locations.
- The loaded data and/or plots can be exported to a variety of data format (ASCII, PNG, JPEG, PS, EPS, etc.).
- GUI (Graphical User Interface) as well as the CUI (Character User Interface) is supplied for beginners.
- Even users who do not have the IDL commercial license will be able to use the GUI-based UDAS on the IDL Virtual Machine* (Under development)

* The IDL Virtual Machine is a freely distributed, cross-platform utility for running compiled IDL codes. The IUGONET project will distribute compiled IDL codes of the data analysis software.

[Getting started](#)

[View screenshots](#)

[List of load procedures and corresponding IUGONET observations](#)

Data Policy

When you use the IUGONET data, please check the data policy for each data set. The data policy will be displayed in the console, when you run the load procedures on IDL. It is also possible to search the data policy at [the IUGONET Metadata Database](#).

Collaborations

日本語版 Japanese Version

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- Metadata Database
- Metadata Format
- Data Analysis Software
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- News UP!!

We have already released the IUGONET metadata database and the **data analysis software** for beta-testing!

IUGONET Data Analysis Software (UDAS)

UDAS is a plug-in software of **TDAS** and includes the load procedures for the ground-based observational data distributed by the IUGONET institutions.

Geomagnetic field indices

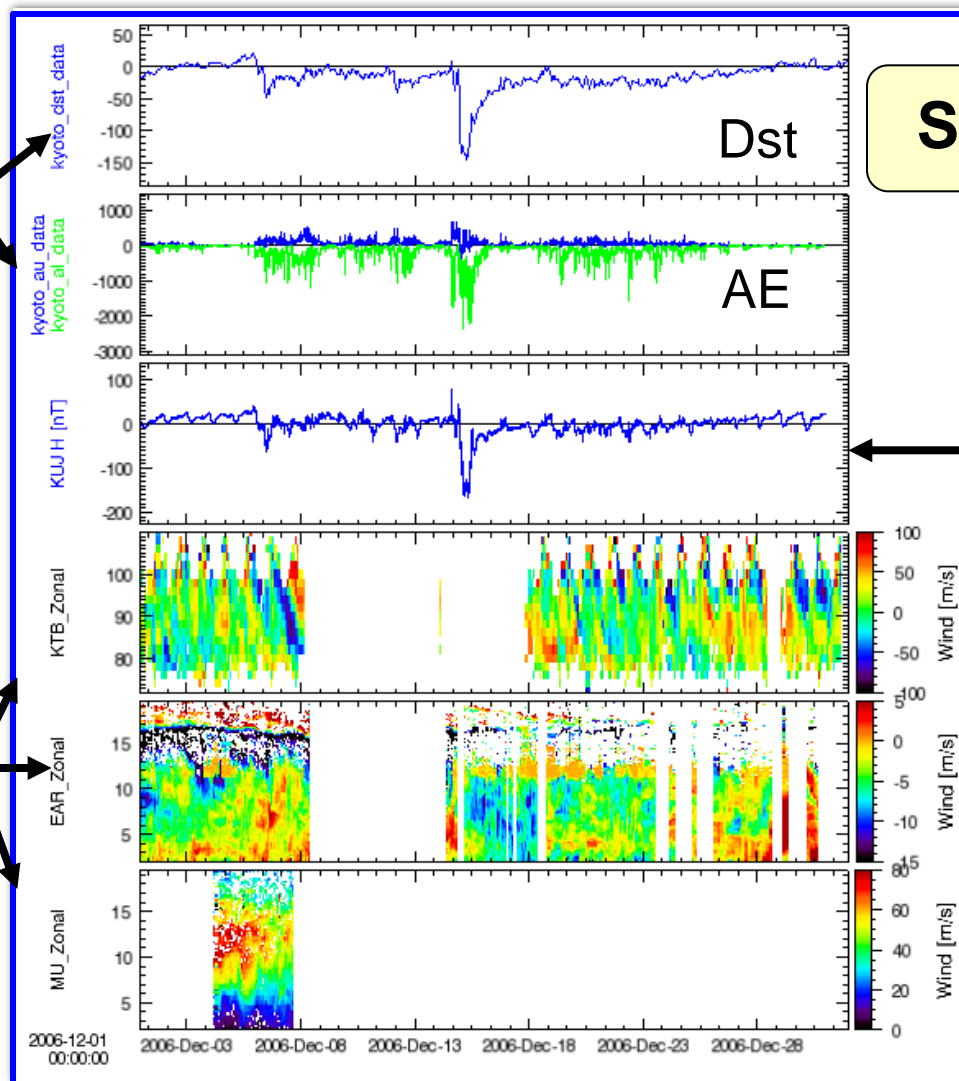
Dst

AE

Sample plot

Global magnetometer network data

Various ionospheric and atmospheric radar



How to install UDAS

<http://www.iugonet.org/en/software/install.html>

IUGONET - UDAS Installation - Windows Internet Explorer

<http://www.iugonet.org/en/software/install.html>

ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

IUGONET - UDAS Installation

IUGONET 超高層大気長期変動の全球地上ネットワーク観測・研究
Inter-university Upper atmosphere Global Observation NETwork
Metadata DB for Upper Atmosphere

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Download UDAS

Latest version:

- UDAS v1.00.b3 for TDAS v6.00 (260kB, released on August 8, 2011)

Old versions:

- UDAS v1.00.b2 for TDAS v6.00 (260kB, released on July 4, 2011)
- UDAS v1.00.b1 for TDAS v6.00 (250kB, released on May 20, 2011)
- UDAS v0.21.b1 for TDAS v5.21 (260kB, released on May 20, 2011)

Release Note

- UDAS v1.00.b3 : Load procedure "iug_load_eiscat" for EISCAT radar data was added.
Some load procedures for radar data from RISH were updated.
- UDAS v1.00.b2 : all-in-one command "plot_map_sdfit" for SD data was added.
- UDAS v1.00.b1 : plug-in software for TDAS v6.00
- UDAS v0.21.b1 : plug-in software for TDAS v5.21

Install UDAS

- [How to install UDAS \(PDF, 0.9MB\)](#)

Notice

- If [TDAS](#) has not been installed yet, please download and install it.
- IDL (6.3-7.1) is required. [IDL 8](#) is not available for current version of TDAS and UDAS.

IUGONET Metadata DB for Upper Atmosphere

UDAS Iugonet Data Analysis Software

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0. If **TDAS** has not been installed yet, download TDAS and set it up.

1. Download **UDAS** from the IUGONET website.

2. Unzip the downloaded file.

3. Copy UDAS into any directory you want.

4. Set IDL path to access UDAS prior to TDAS.



Load procedures provided by IUGONET

Load procedures included in UDAS v1.00.b3

1. Load procedures for the IUGONET data:

- iug_load_blr_rish_txt ; Boundary Layer Radar data (RISH, Kyoto)
- iug_load_ltr_rish_txt ; L-band Lowe Troposphere Radar data (RISH, Kyoto)
- iug_load_ear ; Equatorial Atmosphere Radar data (RISH, Kyoto)
- iug_load_eiscat ; EISCAT radar data (NIPR; Nagoya)
- iug_load_gmag_serc ; MAGDAS geomagnetic data (Kyushu)
- iug_load_gmag_wdc ; AE, Dst, Sym, Asym induces, geomagnetic data (WDC, Kyoto)
- iug_load_iprt ; Iitate Planetary Radio Telescope data (Tohoku)
- iug_load_mu ; Middle and Upper (MU) atmosphere radar data (RISH, Kyoto)
- iug_load_meteor_rish ; Meteor wind radar data (RISH, Kyoto)
- iug_load_mf_rish ; MF radar data (RISH, Kyoto)
- iug_load_gmag_mm210 ; Alias of [erg_load_gmag_mm210](#) (Nagoya)
- iug_load_gmag_nipr ; Alias of [erg_load_gmag_nipr](#) (NIPR)

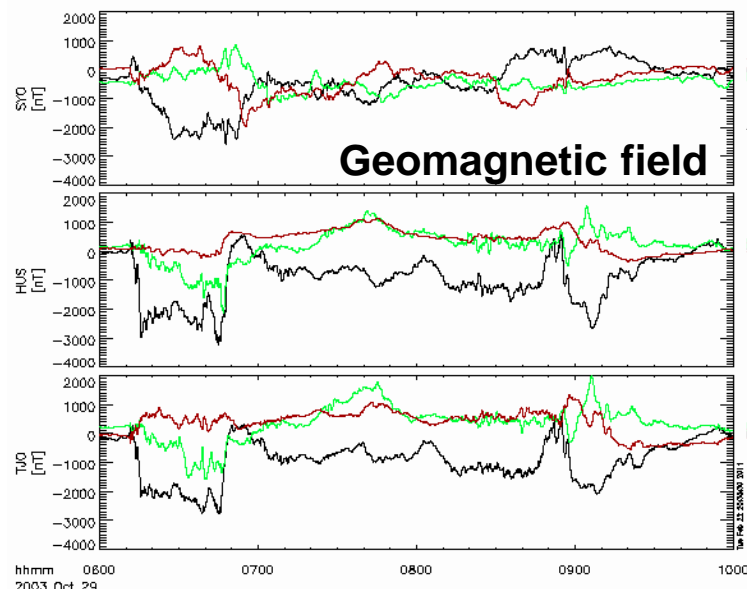
2. Load procedures for the ERG-related data:

- [erg_load_sdfit](#) ; SuperDARN (Nagoya; NIPR; NICT)

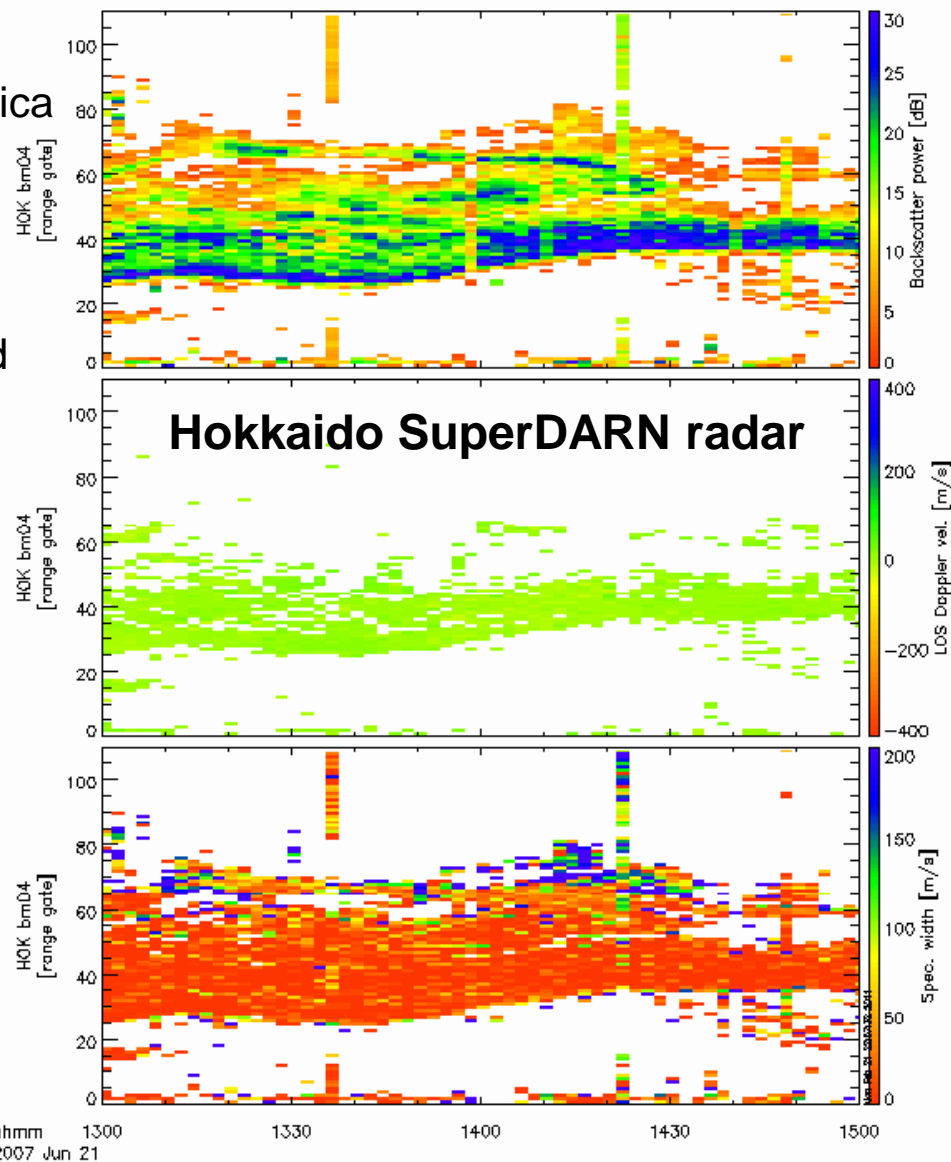
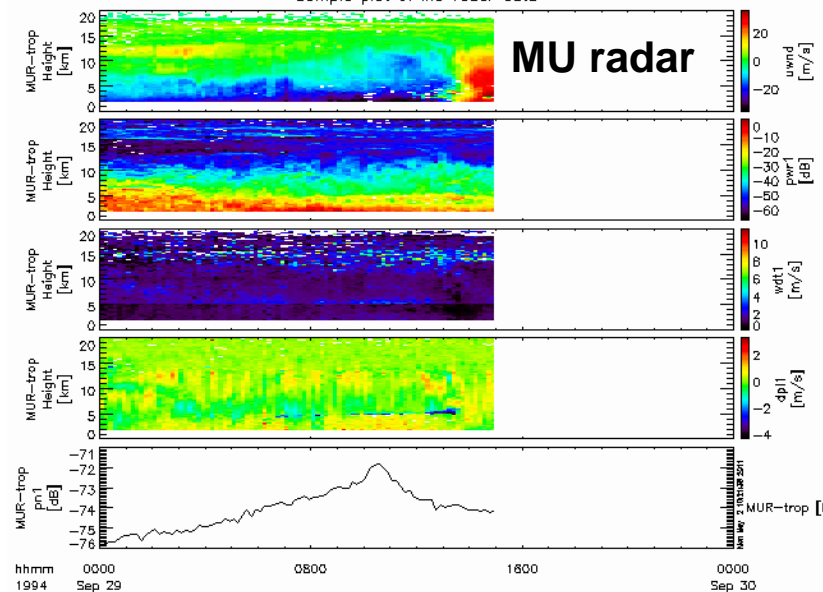
Our software has been developed in collaboration with **ERG Science Center**.



Sample plot of the IUGONET data



Sample plot of MU radar data



GUI for the IUGONET Data

You can use GUI for loading the IUGONET data.

The image displays two windows from the IUGONET software interface.

IUGONET: Load Data Window: This window has a tabbed interface. The 'IUGONET Data' tab is selected and highlighted with a red circle and a red arrow pointing to it from a pink box labeled 'IUGONET Data tab'. Below the tabs, the 'IUGONET Data Selection' section includes:

- Start Time: 2008-03-21/00:00:00
- Stop Time: 2008-03-22/00:00:00
- ☒ Use Single Day
- Instrument Type: SuperDARN#
- A table with columns: Data Type, Site or parameter(s)-1, and Parameter(s). The 'Data Type' column contains 'ionosphere'. The 'Site or parameter(s)-1' column contains 'hok', 'syk', and 'sys'. The 'Parameter(s)' column contains a list of parameters including 'azim_no', 'pwr', 'pwr_err', 'spec_width', 'spec_width_err', 'vlos', 'vlos_err', 'echo_flag', 'quality', 'quality_flag', 'vnrth', 'veast', 'vlos_iscat', and 'vlos_gscat'.
- Buttons: 'Clear Site or Parameters-1' and 'Clear Parameters-1'.
- Note: # means that the load procedure has been developed in collaboration with the ERG Science Center.
- Status bar: 20: IUGONET Data Loaded Successfully

THEMIS: Main Window: This window displays a solar radio wave plot. The plot is titled 'IPRT_SUN_LCP' and shows a color-coded intensity of solar radio waves over time. The x-axis represents time from 2011-07-02 21:43:10 to 06:00:00. The y-axis represents frequency from 0 to 250 MHz. A prominent vertical line of high intensity is visible at approximately 00:00:00. The plot is labeled 'Solar radio waves by IPRT' in large white text. The status bar at the bottom shows a warning: '8: Warning: No valid y scaling data found. Using proportional scaling.'



Summary

- **The IUGONET project** (<http://www.iugonet.org>) builds metadata database and **data analysis software (UDAS)** to promote effective use of upper atmospheric data taken by various ground-based observations.
- **UDAS** is a plug-in software of **TDAS** and provides the load procedures for the various ground-based observational data distributed by each institution in the IUGONET project.
- **The IUGONET products have been beta-released!**
 - Metadata database : <http://search.iugonet.org/iugonet/>
 - Analysis software : <http://www.iugonet.org/en/software.html>

We welcome your feedback